WORK PLAN FOR CLOSURE OF

UNIT NO. 6

SANITARY LANDFILL FOR

PROTECCION TECNICA ECOLOGICA (PROTECO) INC.

Prepared by:

Fred C. Hart Associates, Inc.
Penn Center West III
Suite 106
Pittsburgh, PA 15276

December, 1986

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Fred C. Hart Associates, Inc.

December 18, 1986

HART

U.S. Environmental Protection
Agency
Region 2, 26 Federal Plaza
New York, NY 10278

ATTN: Mr. Richard Walka

RE: PROTECO Facility
Unit #6 Excavation Work Plan

Dear Mr. Walka:

As per pervious discussions with Mr. John Gorman of your staff, we are pleased to enclose an updated Work Plan for the excavation of Unit #6, addressing areas where additional procedural detail was requested. This submittal includes engineering plan and detail information on staging, segregation and decontamination areas as well as specific classification procedures. These procedures are furnished in logic diagram form to facilitate regulatory understanding and field interpretation of exact waste classification requirements. Test pits and testing in advance of excavation work is also proposed.

Your earliest review of this updated plan is requested. Should you have any further questions, do not hesitate to call. We are also continuing to work on additional Liner Compatibility Work Plan details as requested and anticipate making a submittal to you in early January.

Very truly yours,

FRED C. HART ASSOCIATES, INC.

Gary R. Brown/AB

Gary R. Brown, P.E.
Manager, Major Projects
Associate

GRB/sjs

cc: Mr. J. Gorman
Mr. C. Simon
Mr. C. Vasquez/via Lebron

TABLE OF CONTENTS

A. WORK PLAN

1.0 General

The purpose of this Work Plan is to provide a description of procedures to be used for closure of the existing Unit #6 Sanitary Landfill located at the PROTECO Facility in Penuelas, Puerto Rico. This Work Plan covers all key elements of the closure procedure including site preparation, waste characterization and segregation, waste handling and transportation, equipment decontamination and site restoration.

The Sanitary Landfill is located within the PROTECO Facility as shown on Figure 1. It has been used for the disposal of non-hazardous wastes since 1975. Currently, the wastes located in Unit #6 are proposed to be excavated and redisposed in Unit #14, the Non-Hazardous Landfarm. Due to the lack of information or detailed records of the exact types and quantities of wastes located in Unit #6, and because some "small generator" hazardous wastes are believed to have been disposed of in Unit #6, a waste segregation program will be implemented as waste is excavated. The waste will first be excavated and identified/consolidated in a waste segregation area. Waste will then be reclassified as per characteristics and landfilled/stored/disposed of accordingly.

2.0 Site Preparation

In preparation for segregation of identifiable wastes, a High Density Polyethylene (HDPE) Liner will be used in conjunction with an earthen berm to provide containment for the waste handling areas. This area will be large enough to contain all excavated waste in the event of a spill during the segregation/separation procedure. Upon completion of the project, the liner, berm and contaminated soil will be removed and disposed of in an appropriate management facility. An arrangement plan of the segregation, staging and decontamination

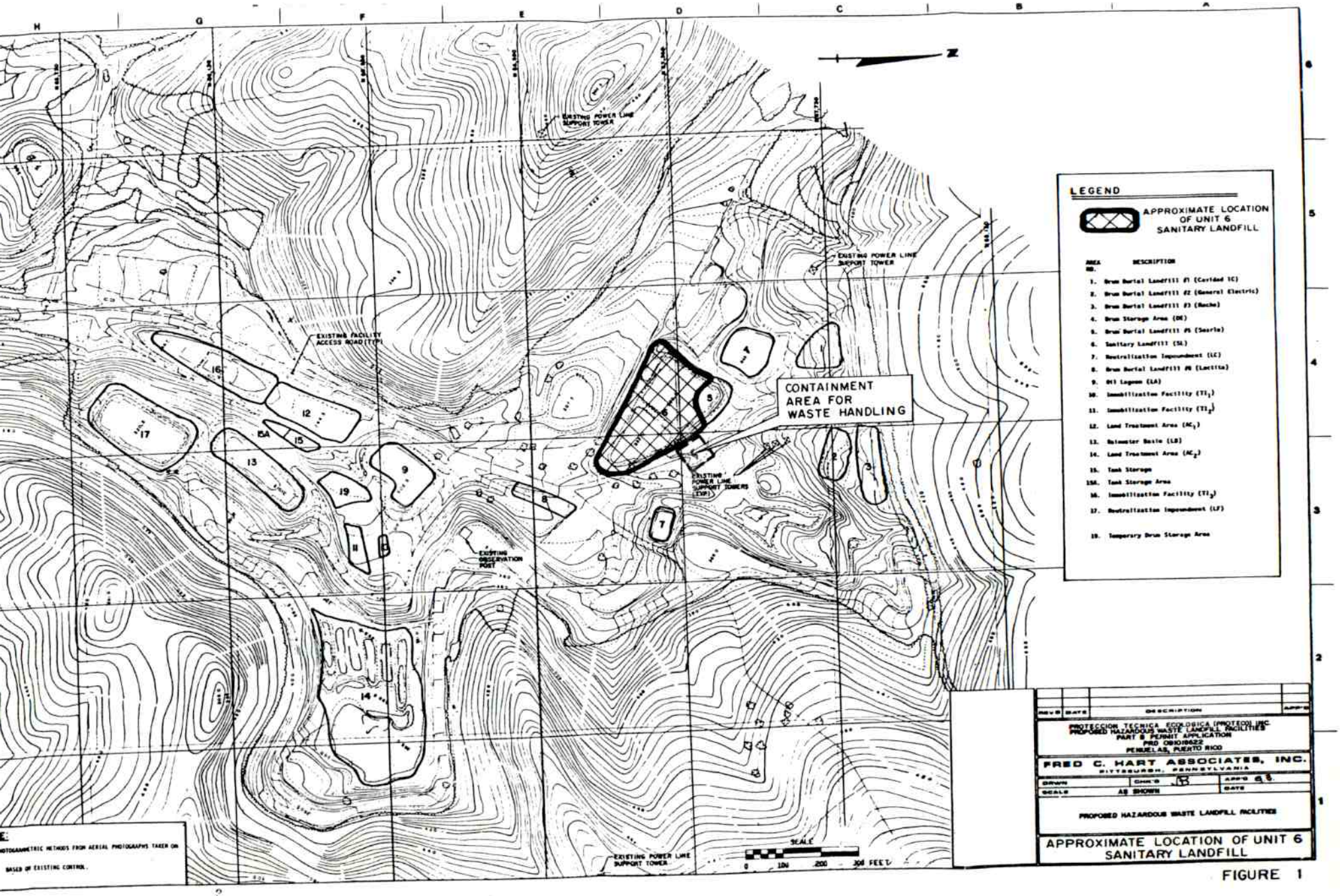

N
EXISTING POWER LINE SUPPORT TOWER
EXISTING FACILITY ACCESS ROAD (TYP.)
CONTAINMENT AREA FOR WASTE HANDLING
EXISTING POWER LINE SUPPORT TOWERS (TYP.)
EXISTING OBSERVATION POST
EXISTING POWER LINE SUPPORT TOWER
SCALE
0 100 200 300 FEET
LEGEND
APPROXIMATE LOCATION OF UNIT 6 SANITARY LANDFILL
AREA NO. DESCRIPTION
1. Drum Burial Landfill #1 (Caribad IC)
2. Drum Burial Landfill #2 (General Electric)
3. Drum Burial Landfill #3 (Roche)
4. Drum Storage Area (DE)
5. Drum Burial Landfill #5 (Searle)
6. Sanitary Landfill (SL)
7. Neutralization Impoundment (LC)
8. Drum Burial Landfill #8 (Loctite)
9. Oil Lagoon (LA)
10. Immobilization Facility (TI1)
11. Immobilization Facility (TI2)
12. Land Treatment Area (AC1)
13. Rainwater Basin (LB)
14. Land Treatment Area (AC2)
15. Tank Storage
15A. Tank Storage Area
16. Immobilization Facility (TI3)
17. Neutralization Impoundment (LF)
18. Temporary Drum Storage Area
PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS TAKEN ON
BASED OF EXISTING CONTROL.
REV'D DATE DESCRIPTION APP'D
PROTECCION TECNICA ECOLOGICA (PROTECO) INC.
PROPOSED HAZARDOUS WASTE LANDFILL FACILITIES
PART B PERMIT APPLICATION
PRD 080018622
PENUELAS, PUERTO RICO
FRED C. HART ASSOCIATES, INC.
PITTSBURGH, PENNSYLVANIA
DRAWN CHK'D APP'D
SCALE AS SHOWN DATE
PROPOSED HAZARDOUS WASTE LANDFILL FACILITIES
APPROXIMATE LOCATION OF UNIT 6 SANITARY LANDFILL

FIGURE 1

areas is shown on Figure 2. Also, due to the relative proximity of drum burial site (Unit #5), special care will be taken when excavating waste from the corner of Unit #6 near Unit #5. If accidental exposure of the drum burial site does occur, a two foot clay layer (compacted in lifts) will be placed. Site preparation and restoration including placement of a clay barrier, if needed, will be subject to construction monitoring inspection by Fred C. Hart Associates, Inc.

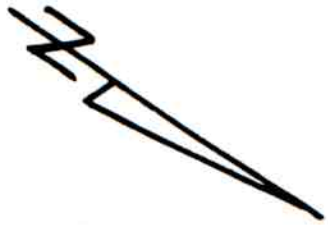
3.0 Waste Characterization and Handling

Although detailed records or materials disposed of in Unit #6 are not available, several wastes and corresponding quantities are known to be disposed in Unit #6.

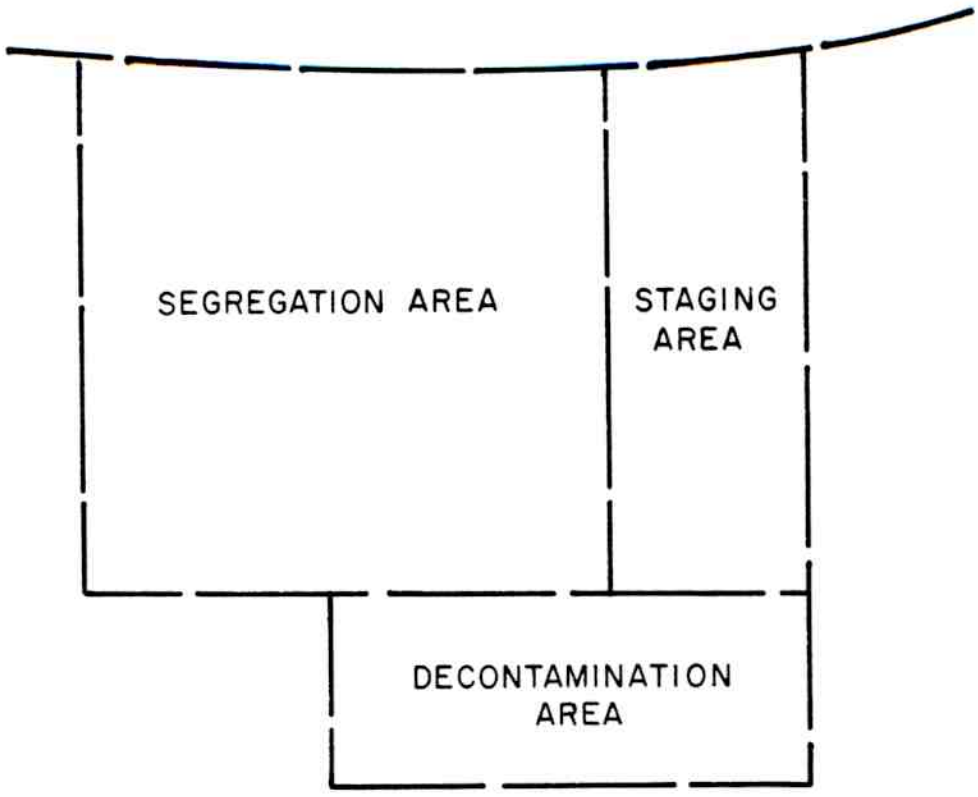
These include:

- 16,000 yds^3 of non-hazardous power plant sludge
- non-hazardous wastewater treatment sludge from tuna fish processing
- 6,888 lbs. of asbestos brake lining exhibiting EP toxicity for lead.

Specific waste sampling and identification procedures will be followed prior to and during removal, in order to adequately characterize the nature of excavated wastes so that proper handling and disposal procedures can be identified. First, and prior to initiation of waste excavation procedures, a random test pit program will be implemented over the Unit #6 area. Test pits will be excavated with a track-mounted backhoe around the perimeter of the landfill, as well as within the landfill boundaries. Soil samples obtained with the backhoe bucket will be tested for release of volatile organics using an Organic Vapor Analyzer (OVA). Since the predominant non-hazardous waste types (such as tuna fish processing sludge) are expected to produce significant amounts of methane, the OVA will be operated in the GC mode so that individual organic compounds can be recognized. In addition, four (4) waste samples will be collected for



UNIT 6



NOTE :

EACH AREA GRADED TO PROVIDE SEPERATE DRAINAGE AND COLLECTION

ARRANGEMENT PLAN

CONTAINMENT AREA FOR WASTE HANDLING

N.T.S.

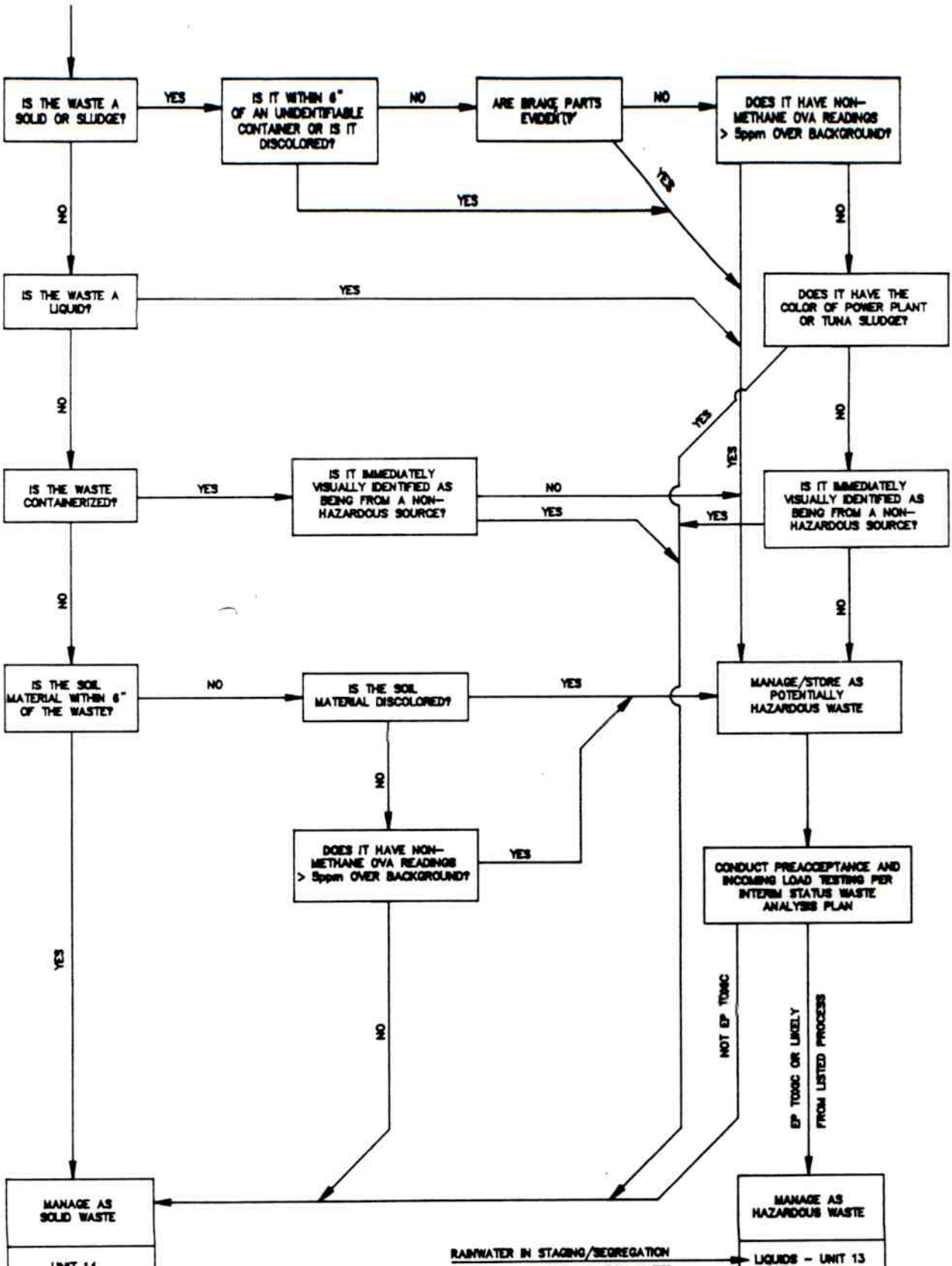
full characterization testing. The EP leachate extraction procedure will be performed upon the samples. The leachate generated will be analyzed for EP toxicity metals and will undergo a priority pollutant scan. It is anticipated that the test pit/soil sampling procedure will permit preliminary identification of location and nature of hazardous waste components, if present within the landfill.

Once actual waste removal begins, the waste will be characterized by visual identification as well as analyses conducted with an OVA. Following excavation with a track-mounted backhoe, the waste will be placed into the HDPE lined containment area, prior to segregation. Visual identification will first be used to distinguish waste types; it is anticipated that much of the waste such as brake linings, power plant sludge or tuna fish processing sludge will be readily distinguishable by texture and color. For wastes that are not visually distinguishable, the OVA will be used in GC mode to determine if volatile organics other than methane are present at detectable levels. Should such volatiles be found to be present, the wastes will be considered to be potentially hazardous and will undergo additional testing according to the Interim Status Waste Analysis Plan for the PROTECO Facility. Any other unidentified excavated wastes (not readily identified as to non-hazardous source) will be handled as potentially hazardous waste in a similar manner. Refer to Figure 3 for initial waste segregation criteria.

All wastes identified as non-hazardous will be removed from the segregation area via dump trucks to existing Unit #14 (Land Treatment Area). Prior to redisposal, the wastes will be required to meet the "Paint-Filter Test", as detailed in EPA 40 CFR. Wastes will be placed into Unit #14 according to standard sanitary landfill operating practices.

Drums and other containerized hazardous wastes will be removed from the segregation area and placed into Unit #4 as soon as safe storage characteristics can be determined. These wastes will then undergo detailed waste analyses according to Section III of the Interim Status Waste Analysis Plan for PROTECO. Any non-containerized hazardous waste in the segregation area will also be tested in the same manner, prior to

INITIAL WASTE CLASSIFICATION PROCEDURES LOGIC DIAGRAM



event, wastes will be tested within 72 hours of excavation, to insure expeditious management of any hazardous materials. Normal lab turnaround of 5 to 7 days is anticipated for preacceptance testing, after which a final decision regarding the management method will be made. In the event of an extended period for further identification/testing, wastes will be containerized to provide near-term safe storage.

4.0 On-Site Transportation

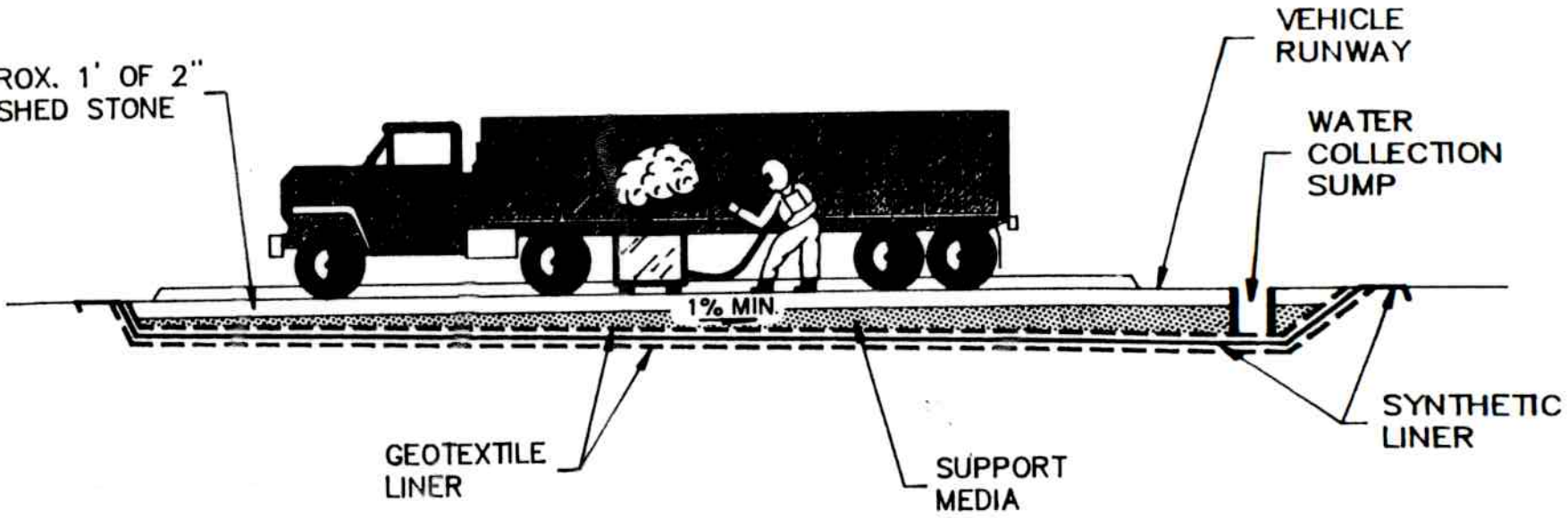
Non-hazardous waste transportation will be accomplished by dump trailers. Flat bed transport trucks or fork lift trucks will be used for moving containers and/or bags to the drum storage area. Dump trucks will be inspected to ensure good operating condition, and will be equipped with a latched or rachet-type tailgate. Trucks will be cleaned of external debris before leaving for Unit #14, according to the decontamination procedure discussed in Section 5.0 of this Work Plan.

5.0 Decontamination

All construction equipment will be decontaminated when leaving the work area with high pressure wash equipment on a decontamination pad, constructed as shown on Figure 4. The resultant water will be transported by a tank truck to the rainwater basin. All debris remaining in the segregation or staging area will be cleaned and disposed of in the appropriate location.

Trucks will be decontaminated in the same manner at the segregation area. Water used in the decontamination process will be collected from the low point of the HDPE liner and discharged to the rainwater basin. Any collected rainwater in the staging, segregation or decontamination areas will be handled in a similar manner.

VEHICLE AND EQUIPMENT DECONTAMINATION STATION



NOTE:

TRAINED TECHICIANS SHOULD DECONTAMINATE WHEELS AND UNDERCARRIAGES OF LOADED VEHICLES AND/OR EQUIPMENT USING PORTABLE STEAM/HIGH PRESSURE WATER UNITS.

WASH WATER GENERATED DURING THIS OPERATION SHALL BE COLLECTED AT A COMMON SUMP AND PUMPED DIRECTLY TO A BULK LIQUID TRAILER OR ABOVE GRADE STORAGE TANK FOR ON-SITE PROCESSING OR OFF-SITE TREATMENT AND/OR DISPOSAL.

FIGURE 4

6.0 Site Restoration

Upon completion of waste removal procedures, the area will be regraded to provide positive drainage, compatible with the overall surface water management plan for the facility. Additional clean fill will be placed, if required to reach adequate final grade. All materials from the segregation area and deconamination pad will be removed and disposed, based on any remaining contaminants in/on these materials. Finally, the entire area will be seeded to induce vegetation sufficient to minimize soil erosion from the disturbed areas.

7.0 Contingency Planning

In order to address the unplanned release of hazardous waste into the air, soil or surface water, or any other emergency conditions that may occur during waste removal, the Interim Status Contingency Plan for PROTECO must be followed. Although potential release or emergency conditions resulting from the proposed closure activities are anticipated to be minor, adherence to the Contingency Plan will insure the highest level of protection available to both human health and the environment. The plan maps out the general strategies for dealing with both sudden (acute) and non-sudden events. The strategies involve a series of steps to be taken in response to an actual emergency incident and includes decision points where outside assistance may be required and the circumstances under which the evacuation of the facility is advisable. The strategies also identify the equipment and materials that are to be used if an accident should occur.

For example, should deteriorated drums be accidentally exposed during waste excavation, with subsequent release of unidentified liquids into the excavation area, the Contingency Plan will be implemented. First, all waste removal activities will cease, and site personnel will contact the Facility's Emergency Coordinator

Plan will be implemented, otherwise control and containment measures will be implemented. Generally, it is anticipated that the Full-Scale Contingency Plan will not be warranted, and that containment measures such as clay berms can be utilized to control migration of the spill. A representative sample of the unidentified liquid will then be obtained and will undergo characterization testing. The liquid will be managed and disposed as a hazardous waste until otherwise determined by the testing.

B. PERSONNEL

HART proposes to have the work inspected and monitored by Mr. David Bradley, whose resume is attached. Should any personnel substitutions be necessary, we will obtain Agency approval in advance. It is anticipated that a kick-off meeting will be held between HART and Agency personnel prior to initiation of site cleanup activities.

RESUME

David Bradley

Fields of Competence

Environmental monitoring; management of chemical/hazardous wastes; chemical/petroleum bulk storage management; municipal and industrial landfill operations; landfill closures; groundwater contamination investigations; groundwater remedial actions; waste treatment systems; liability minimization assessments; knowledge of regulations; waste minimization; personnel training; environmental compliance auditing.

Experience Summary

Five years of varied environmental engineering experience in an industrial setting including: design and implementation of waste management programs involving waste stream identification, storage requirements, disposal means, emergency planning, and personnel training; management of chemical/petroleum storage systems including underground tank integrity testing, inventory control, removal and replacement of failed tanks, and design of container storage areas; development and management of monitoring programs for water and wastes; design, development and management of groundwater quality investigations at industrial waste landfills; preparation of permit applications for air, water, solid waste, and hazardous waste operations; environmental compliance auditing.

Education

B.S.C.E., Civil Engineering, Union College, 1981
M.S., Environmental Engineering, Rensselaer Polytechnic Institute, 1985

Key Projects

- Engineer responsible for design and implementation of chemical waste management program of 2,000 person research and development facility. Work items included waste stream identification and analysis, design and construction of waste container storage area, determination of waste disposal means, emergency procedures preparation and testing, and personnel training.

- Project Engineer responsible for program designed to identify, evaluate, and minimize all waste streams for a 17,000 person manufacturing facility. Examples of waste minimization efforts included establishment of excess materials exchange, the sale of salvageable items, recycling of product within processes, and cascading of waste streams to be feed stocks for other purposes.

- Engineer responsible for maintaining integrity of bulk storage facilities for petroleum products. Program included underground tank integrity testing, development and management of above ground tank inspections, inventory control, and replacement of failed tanks.

- Engineer responsible for development and management of environmental compliance auditing program. Program, which was successfully implemented at three facilities, included review of site operations for permit compliance, liability limitation assessment, recommendations for improvement, and a follow-up tracking system to ensure continued compliance.

- Engineer responsible for development and management of groundwater quality investigations at two industrial waste landfills. Program included well installation, remote sensing techniques of subsurface conditions, interpretation of results, and recommendations for remedial actions.

- Developed and implemented a spill prevention control and countermeasure plan for a 2,000 person research and development facility.

- Developed and implemented a closure plan for a hazardous waste container storage facility.

- Developed and managed PCB equipment compliance program. Program included inventory and inspection procedures, storage requirement, and shipment for disposal.

- Assisted in the design and implementation of a remedial action plan that provided interception of contaminated groundwater from reaching the drinking water supply of an industrial facility.

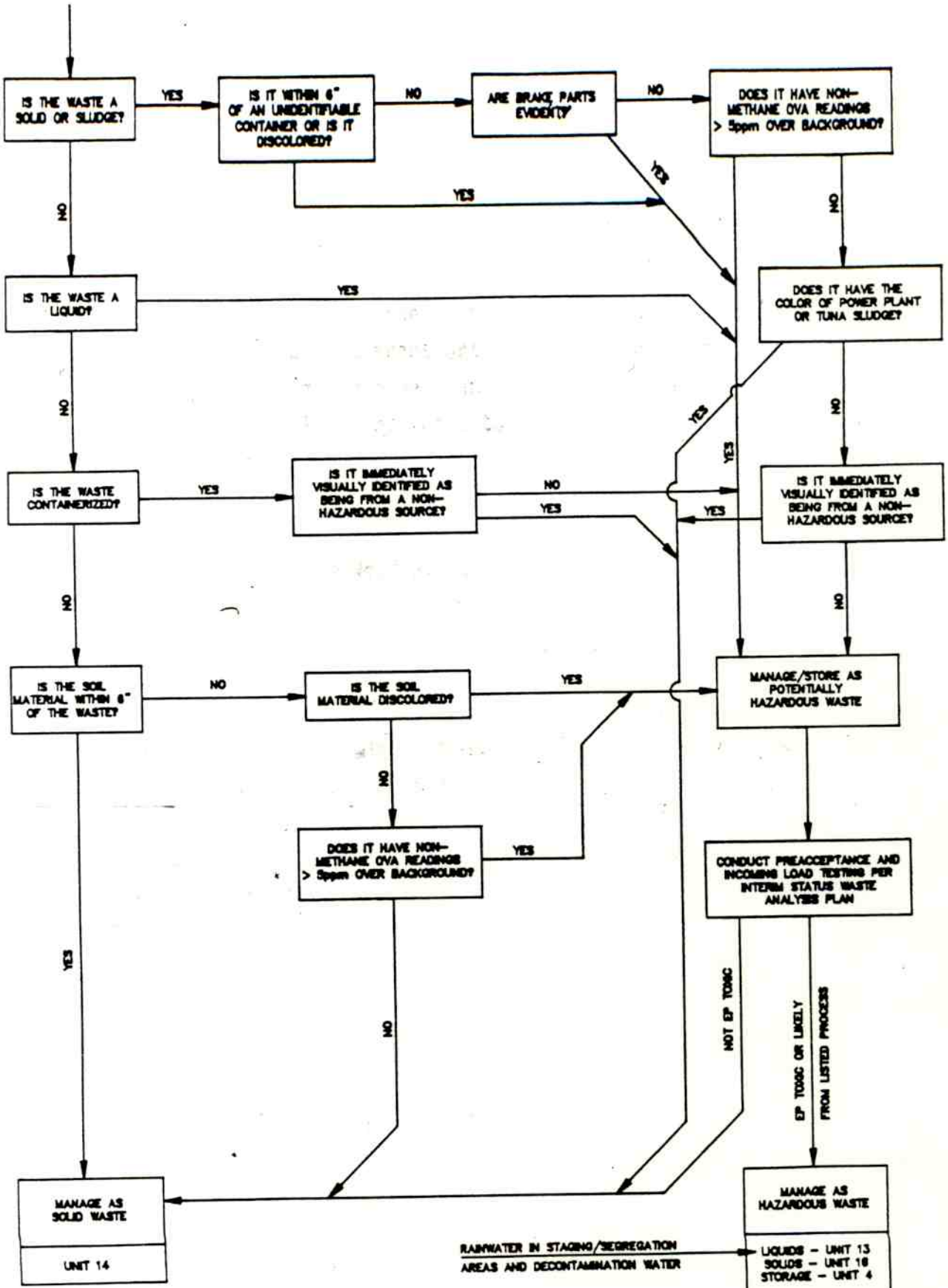
Professional Affiliations

National Water Well Association
Certified--Hazardous Materials Manager by Board of Hazard Control Management

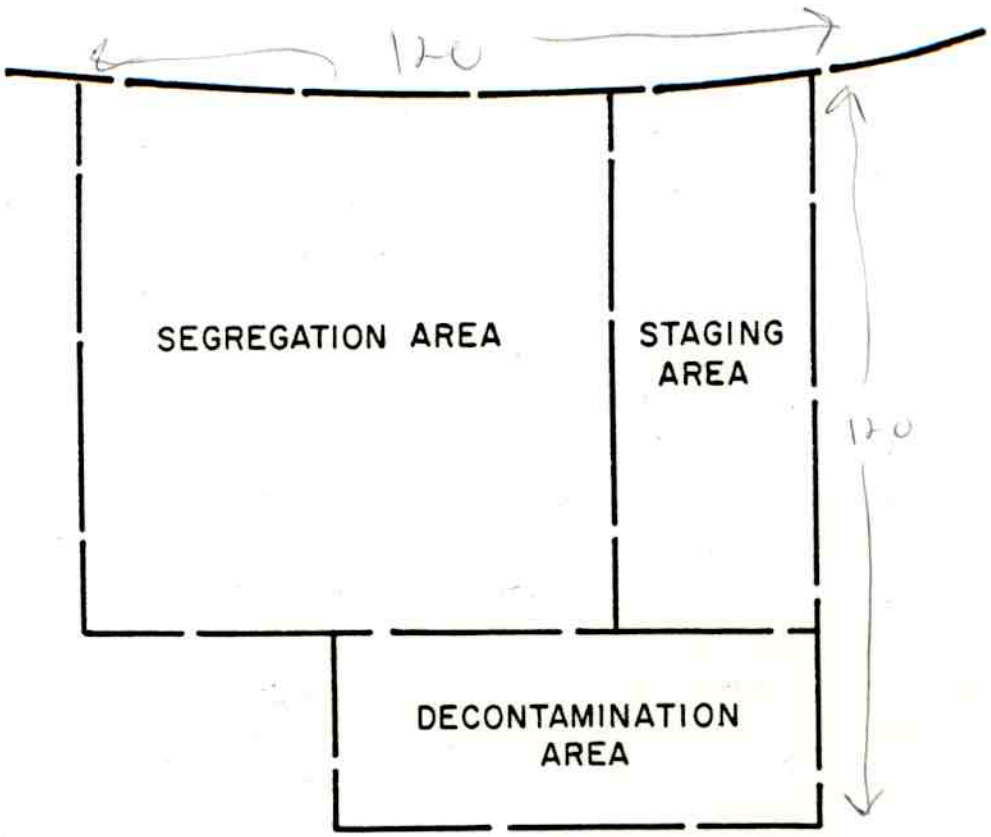
Publications and Presentations

Bradley, D., "Interpretation and Statistical Analysis of NYSDEC Bacteriological Data from Lake George, New York, for 1979 through 1983". Presented at 3rd Lake George Symposium, Lake George, New York, April 1984.

INITIAL WASTE CLASSIFICATION PROCEDURES LOGIC DIAGRAM



UNIT 6



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ARRANGEMENT PLAN

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VEHICLE AND EQUIPMENT DECONTAMINATION STATION

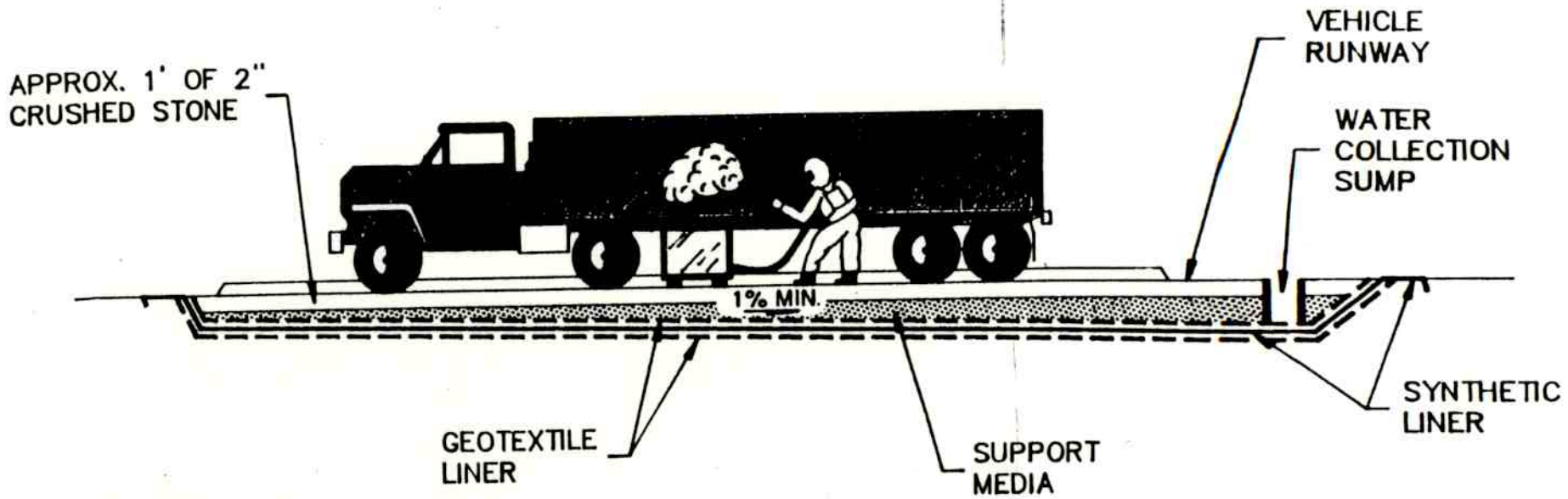

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FIGURE 4

Proteco Unit No. 6 - Sanitary Landfill

Closure Schedule

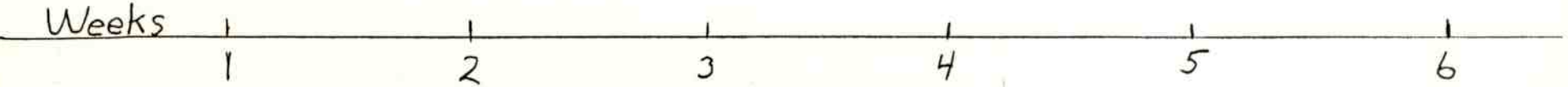
Excavate testpits - define extent of fill area, collect representative samples

Sample Analyses - waste characterization

Site Preparation - Setup Segregation, Staging, Decontamination Areas

Landfill Excavation - Transport of non-hazardous wastes, segregation and containerization of hazardous wastes.

Grading of fill area;
decommissioning of work area



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Protection Unit 6 workplan

" " " " revision

		Provided (Y/N)	Adequate (Y/N)	Not Applicable	Comments
(5)(b)	Testing for Appendix VIII hazardous constituents				
(5)(c)	Compliance point groundwater quality values				
(6)	Annual determination				
(7)	Statistical determination				
(7)(a)	Statistical procedure				
(7)(b)	Results				
URE AND POST-CLOSURE REQUIREMENTS					
	Closure plans				
	Closure performance standard	N N			
	Inventory removal, disposal or decontamination of equipment	Y Y N N	N N		tech procedures, truck decon
(1)	Waste pile closure activities				
(2)	Surface impoundment closure activities			✓ ✓	
(3)	Closure of land treatment facilities				
(3)(a)	Continuance of treatment			✓	
(3)(b)	Land treatment unit cover			✓	
(3)(b)(1)	Cover characteristics			✓	
(3)(b)(2)	Drainage and erosion			✓	
(3)(b)(3)	Maintenance needs			✓	

		Provided (Y/N)	Adequate (Y/N)	Not Applicable	Comments
3)(c)	Exemption from vegetative cover requirements			✓	
	Closure of disposal units				
1)	Disposal impoundments			✓	
1)(a)	Elimination of liquids	N Y	Y		Covered by contingency plan ✓
1)(b)	Waste stabilization			✓	
2)	Cover design	~~N~~		✓	
3)	Minimization of liquid migration	N Y	Y		
4)	Maintenance needs	N N			
5)	Drainage and erosion	N N			
6)	Settlement, subsidence, and displacement	N N			
7)	Freeze/thaw effects	~~N~~		✓	Puerto Rico, no freezing
	Schedule for closure	N Y	Y		marginal
	Extensions for closure time			✓	
	Certification of closure	N N			
	Post-closure plan				not needed
	Post-closure contact			✓	
	Post-closure security			✓	
	System design description			✓	
(1)	Leachate collection/detection system				

		Provided (Y/N)	Adequate (Y/N)	Not Applicable	Comments
F-6	Financial assurance mechanism for closure				
F-6a	Closure trust fund				
F-6b	Surety bond				
F-6b(1)	Surety bond guaranteeing payment into a closure fund				
F-6b(2)	Surety bond guaranteeing performance of closure				
F-6c	Closure letter of credit				
F-6d	Closure insurance				
F-6e	Financial test and corporate guarantee for closure				
F-6f	Use of multiple financial mechanisms				
F-6g	Use of financial mechanism for multiple facilities				
F-7	Post-closure cost estimate				
F-8	Financial assurance mechanism for post-closure care				
F-8a	Post-closure trust fund				
F-8b	Surety bond				
F-8b(1)	Surety bond guaranteeing payment into a post-closure trust fund				
F-8b(2)	Surety bond guaranteeing performance of post-closure care				
F-8c	Post-closure letter of credit				

		Provided (Y/N)	Adequate (Y/N)	Not Applicable	Comments
F-8d	Post-closure insurance				
F-8e	Financial test and corporate guarantee for post-closure care				
F-8f	Use of multiple financial mechanisms				
F-8g	Use of a financial mechanism for multiple facilities				
F-9	Liability requirements				
F-9a	Coverage for sudden accidental occurrences				
F-9a(1)	Endorsement or certification				
F-9a(2)	Financial test for liability coverage				
F-9a(3)	Use of multiple insurance mechanisms				
F-9b	Coverage for nonsudden accidental occurrences				
F-9b(1)	Endorsement or certification				
F-9b(2)	Financial test for liability coverage				
F-9b(3)	Use of multiple insurance mechanisms				
F-9c	Request for variance				
F-10	State mechanisms				
F-10a	Use of state-required mechanism				
F-10b	State assumption of responsibility				

		Provided (Y/N)	Adequate (Y/N)	Not Applicable	Comments
F-2c(2)	Gas venting system	N N			still needed
F-2d	Inspection plan			~	
F-2e	Monitoring plan			~	
F-2f	Maintenance plan			~	
F-2g	Special waste management plan				N A
F-2g(1)	Waste description				
F-2g(2)	Soil description				
F-2g(3)	Mobilizing properties				
F-2g(4)	Additional monitoring techniques				
F-2h(1)	Land treatment				
F-2h(2)	Exemption from land treatment post-closure care requirements				
F-2h(2)(a)	Background and hazardous constituent values				
F-2h(2)(b)	Sampling methods				
F-2h(2)(c)	Statistical methods				
F-2h(3)	Exemption from groundwater monitoring requirements				
F-2i	Personnel training				
F-3	Notice to local land authority				
F-4	Notice in deed				
F-5	Closure cost estimate	N N			